

12. Troubleshooting

Check the basic items first to judge if the problem was caused by breakdown or misuse. If none of the basic items are related to the problem, please scrutinize the machine according to the 'Breakdown Diagnosis by Symptoms' method.

12-1 Basic Breakdown Diagnosis Items

1. The input voltage should be rating voltage $\pm 10\%$ range.
The airconditioner may not operate properly if the voltage is out of this range.
2. Is the link cable linking the indoor unit and the outdoor unit linked properly?
Check the terminals if the indoor unit and outdoor unit are properly linked by the same number of cables.
Otherwise the airconditioner may not operate properly.
3. When a problem occurs due to the contents illustrated in the table below it is a symptom not related to the malfunction of the airconditioner.

No	Operation of air conditioner	Explanation
1	The OPERATION indication LED(GREEN) blinks when a power plug of the indoor unit is plugged in for the first time.	It indicates power is on. The LED stops blinking if the operation ON/OFF button on the remote control unit is pushed.
2	In a COOL operation mode, the compressor does not operate at a room temperature higher than the setting temperature that the INDOOR FAN should operate. In a HEAT operation mode, the compressor does not operate at a room temperature lower than the setting temperature that indoor fan should operate.	In happens after a delay of 3 minutes when the compressor is reoperated. The same phenomenon occurs when a power is on. As a phenomenon that the compressor is reoperated after a delay of 3 minutes, the indoor fan is adjusted automatically with reference to a temperature of the air blew.
3	Fan speed setting is not allowed in DRY() mode.	The speed of the indoor fan is set to LL in DRY mode. Fan speed is selected automatically in AUTO mode.
4	Compressor stops operation intermittently in DRY() mode.	Compressor operation is controlled automatically in DRY mode depending on the room temperature and humidity.
5	Compressor of the outdoor unit is operating although it is turned off in a HEAT mode.	When the unit is turned off while de-ice is activated, the compressor continues operation for up to 9 minutes (maximum) until the deice is completed.
6	Timer LED(GREEN) of the indoor unit lights up and the air conditioner does not operate.	Timer is being activated and the unit is in ready mode. The unit operates normally if the timer operation is cancelled.
7	The compressor and indoor fan stop intermittently in HEAT mode.	The compressor and indoor fan stop intermittently if room temperature exceeds a setting temperature in order to protect the compressor from overheated air in a HEAT mode.
8	Indoor fan and outdoor fan stop operation intermittently in a HEAT mode.	The compressor operates in a reverse cycle to remove exterior ice in a HEAT mode, and indoor fan and outdoor fan do not operate intermittently for within 20% of the total heater operation
9	The compressor stops intermittently in a COOL mode or DRY mode, and fan speed of the indoor unit decreases.	The compressor stops intermittently or the fan speed of the indoor unit decreases to prevent inside/outside air frozen depending on the inside/outside air temperature.

12-2 Trouble check in the initial status

12-2-1 Diagnosis and marking of the part in trouble.

■ MC24F3A(B)NXAX(XAP)/MC12F3A(B)NXAX(XAP)/MC18F2A(B)NXAX(XAP)/MC12F2NXAX(XAP)/MC09F3ANXSS/MC06F3ANXSS/MC09F2ANXSS

Description	LAMP		
	OPERATION	TIMER	TURBO
			
Indoor unit room temperature sensor error (open or short)	○	●	○
Indoor unit heat exchanger temperature sensor error (open or short)	●	●	○
Indoor fan motor mal function	●	○	●
EEPROM error	○	●	●
Option error (option wasn't set up or option data error)	●	●	●
Outdoor error(sensor)	●	●	○
Communication error	●	●	○
Simultaneous operation error(cool, heat)	●	●	●

● : Lamp on ○ : Lamp off ● : Lamp flickering

■ MH24F3A(B)NHAC/MH12F3A(B)NHAC/MH12F2A(B)NHAC/MH16F2A(B)NXAX/MH12F2ANXAX

Description	LAMP		
	OPERATION	TIMER	TURBO
			
Indoor unit room temperature sensor error (open or short)	○	●	○
Indoor unit heat exchanger temperature sensor error (open or short)	●	●	○
Indoor fan motor mal function	○	○	●
EEPROM error	●	●	●
Option error (option wasn't set up or option data error)	●	●	●
Outdoor error(sensor)	●	○	●
Communication error	○	●	●
Cooling/Heating Confusion Error (MH12F3ANHAC ONLY)	●	●	●

● : Lamp on ○ : Lamp off ● : Lamp flickering

12-2-2 Operation with abnormal motion

No	Abnormal condition	Inspection		Initial Diagnosis
1	No response from the remote control operation signal.	<ul style="list-style-type: none"> • Plug out and plug in 5 seconds later. 	Able to operate the remote control.	OK
			Unable to operate the remote control.	<p>Press the  button in the indoor unit.</p> <ul style="list-style-type: none"> • If it operates, the remote control and indoor unit receiver are in trouble. • If not, the indoor unit is in trouble.
2	Unable to operate the outdoor unit (MC** model only)	<ul style="list-style-type: none"> • Press the TURBO button with the remote control. • In 3 minutes, check the voltage between the indoor unit terminal block N1 and 1. 	AC200V ~ AC240V	Problem with the outdoor unit or PCB
			No power source displayed.	Problem with the relay (RY71) or PCB

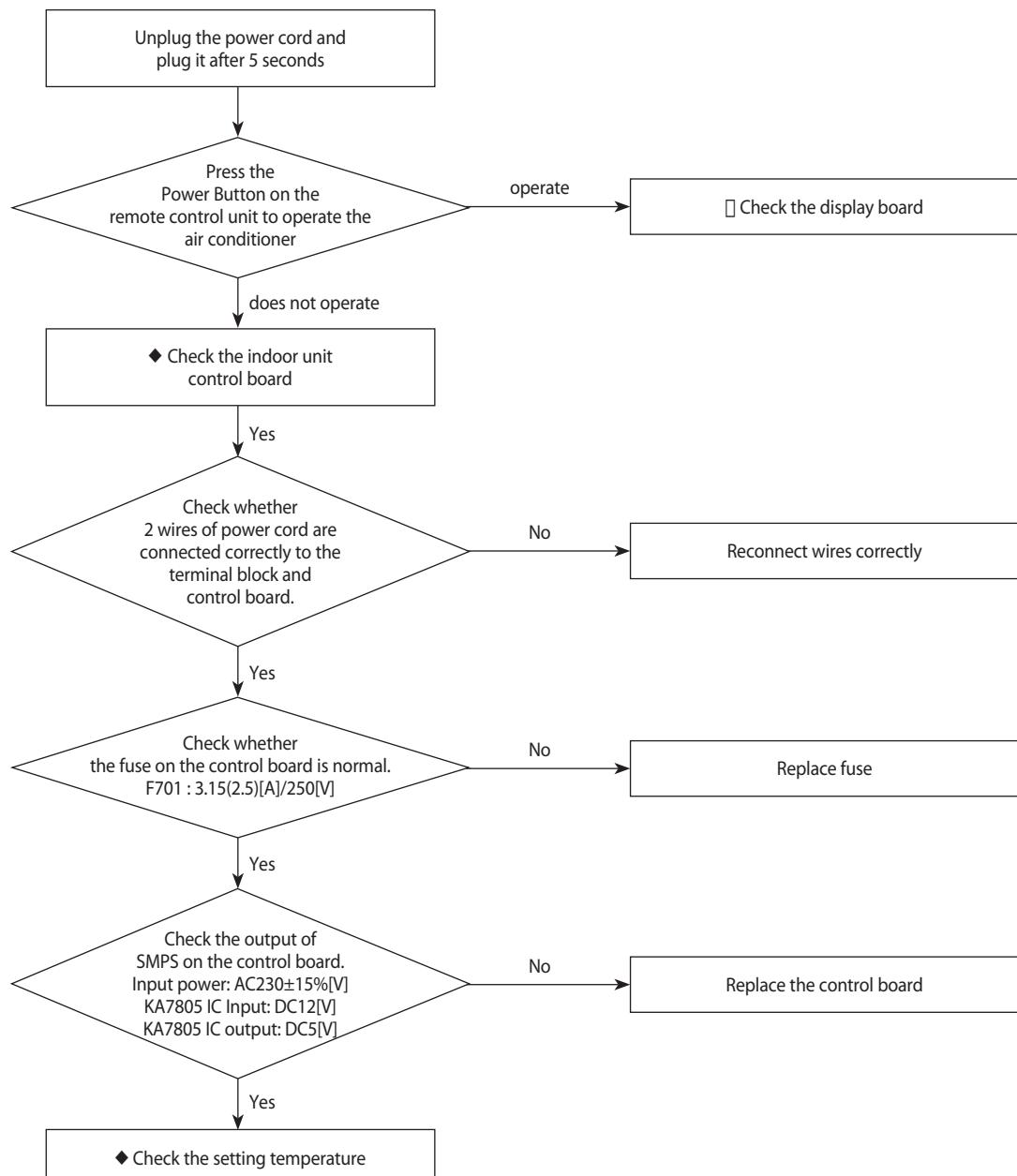
12-3 Fault Diagnosis by Symptom

12-3-1 No Power (completely dead)-Initial diagnosis

1. Checklist :

- 1) Is input voltage normal?
- 2) Is AC power linked correctly?
- 3) Is input voltage of DC regulator IC KA7805 of indoor unit PCB normal? (11.8Vdc~12.2Vdc)
- 4) Is output voltage of DC regulator IC KA780 of indoor unit PCB normal? (4.5Vdc-5.5Vdc)

2. Troubleshooting procedure

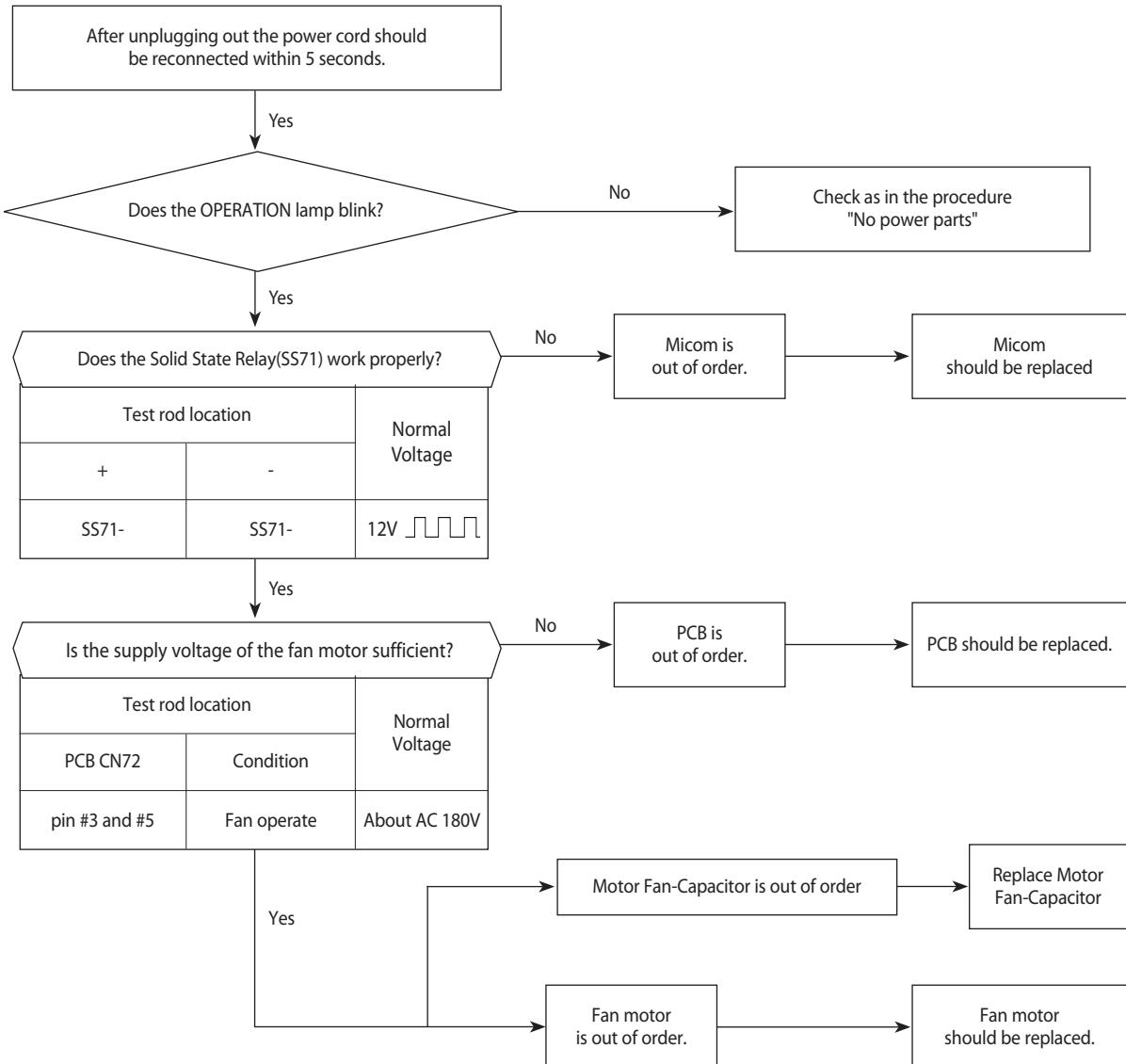


12-3-2 When the Indoor Unit Fan Does Not Operate. (Initial Diagnosis)

1. Checklist :

- 1) Is the indoor unit fan motor properly connected with the connector (CN72)?
- 2) Is the AC voltage correct?
- 3) Is HALL IC in indoor fan motor properly connected with the connector (CN44)?
- 4) Is the running capacitor (CR71) properly connected with PCB board?

2. Troubleshooting procedure

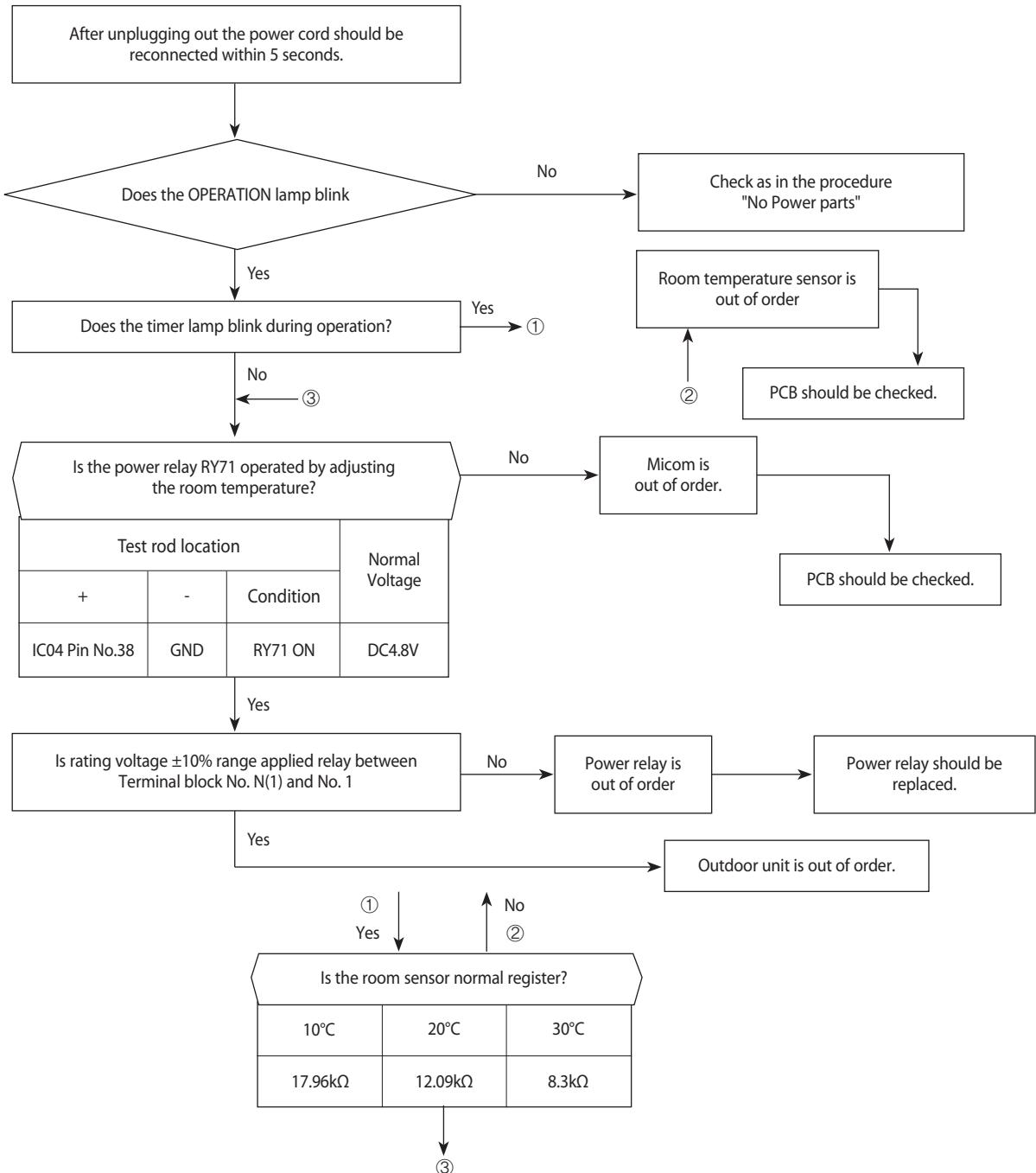


12-3-3 When the Outdoor Unit Does Not Operate. (Initial Diagnosis) : MC** model only

1. Checklist :

- 1) Is input voltage normal?
- 2) Is the set temperature of the remote control higher than room temperature in COOL mode?
- 3) Is the POWER IN wire-power(N) linked correctly?
- 4) Is the outdoor unit properly connected with the TERMINAL BLOCK connecto?

2. Troubleshooting procedure

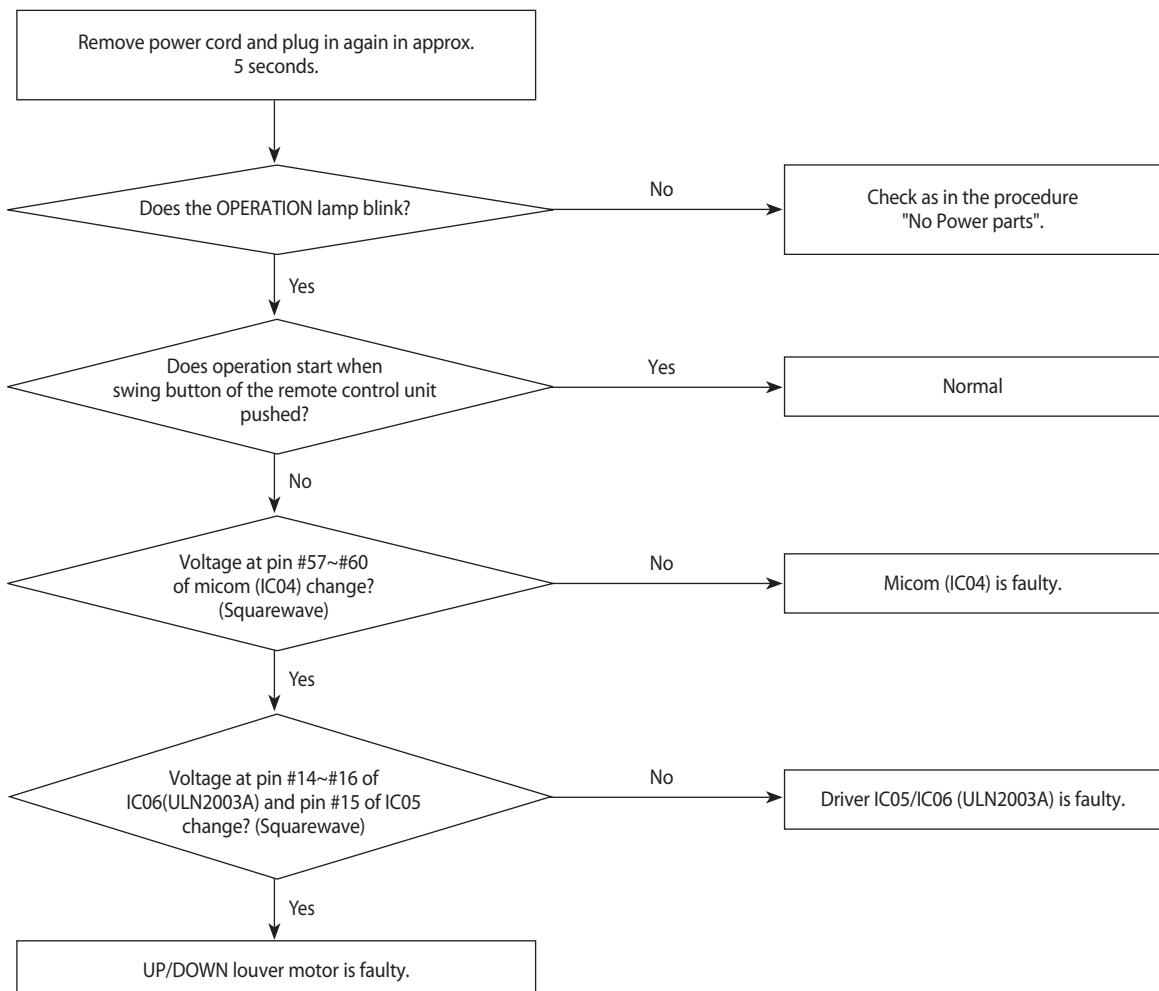


12-3-4 When the UP/DOWN Louver Motor Does Not Operate. (Initial Diagnosis)

1. Checklist :

- 1) Is input voltage normal?
- 2) Is the UP/DOWN louver motor properly connected with the connector (CN61)?

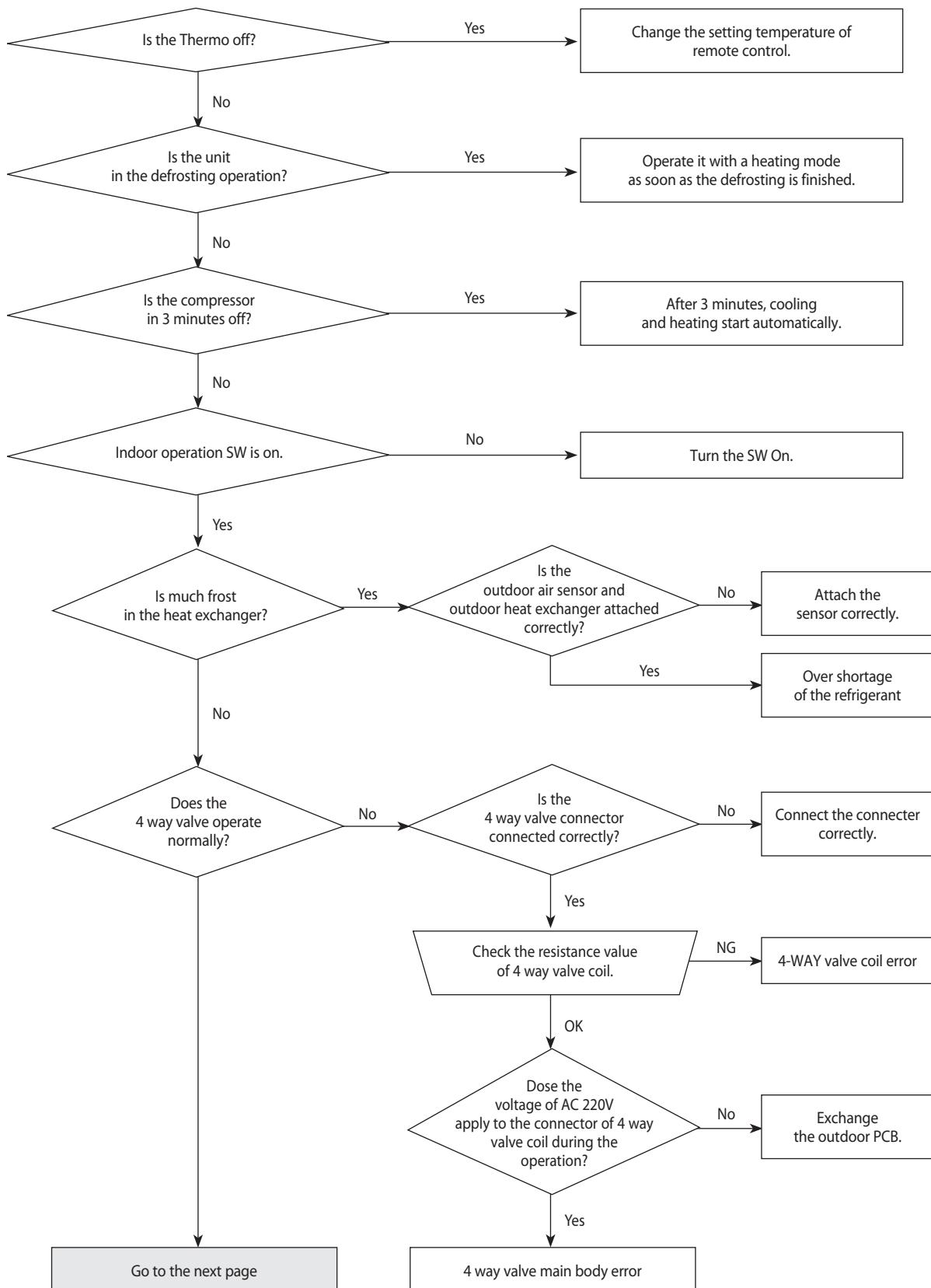
2. Troubleshooting procedure



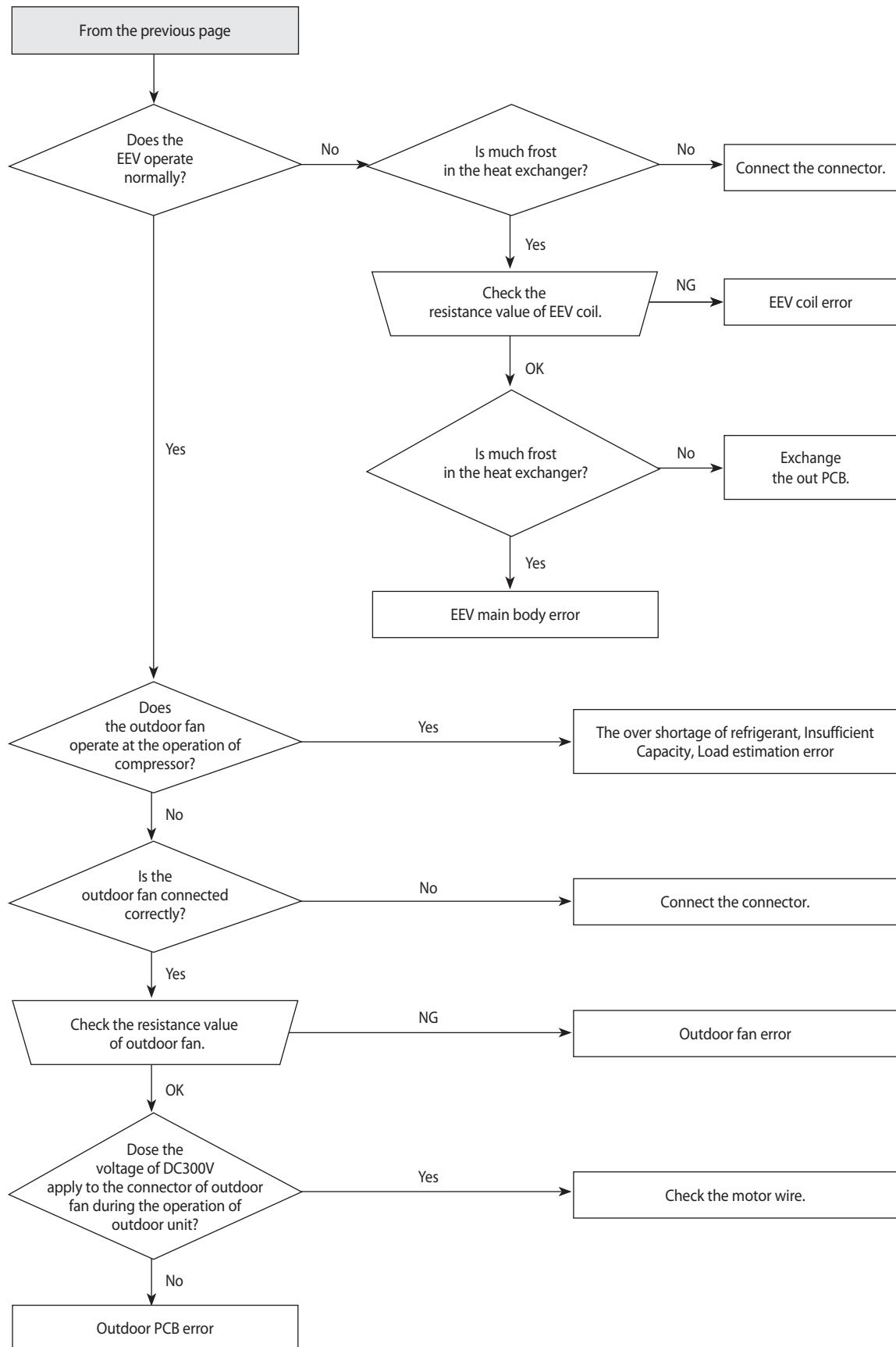
12-3-5 In the HEAT mode, When there is no warm air current. Check this first : MH** model only

1) Is the set temperature of Remote Control lower than room temperature in Heat mode?

2) Is the Outdoor PCB properly connected with 4 way V/V connector?



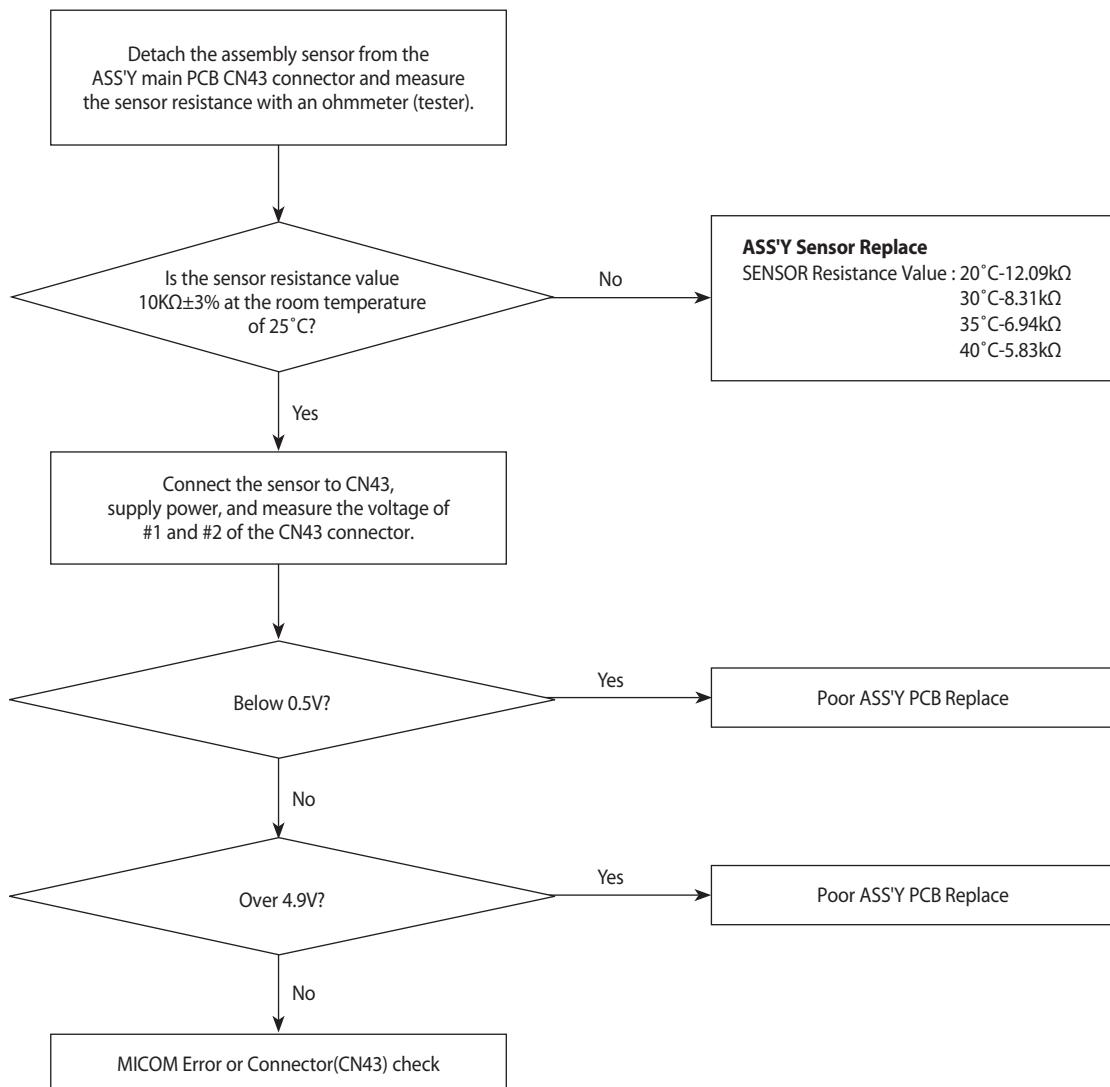
In the HEAT mode, When there is no warm air current. Check this first : MH* model only (cont.)**



12-3-6 Room temperature sensor failure

Description	LAMP		
	OPERATION	TIMER	TURBO
Indoor unit room temperature sensor error (open or short)			

: Lamp off : Lamp flickering



12-3-7 Room Pipe sensor failure

Description	LAMP		
	OPERATION	TIMER	TURBO
			
Indoor unit heat exchanger temperature sensor error (open or short)			

 : Lamp off  : Lamp flickering

1. Check the assembly condition of the sensor connector(CN43) on the indoor unit Main PCB and if not assembled, reassemble the connector accurately.
2. Detach the room pipe sensor connector(CN43) and check the resistance between Pin #3 and #4.

Temperature(°C)	Resistance Value(Kohm)	Temperature(°C)	Resistance Value(Kohm)	Others
15	14.68	30	8.31	The data tolerance is $\pm 3\%$.
20	12.09	35	6.94	
25	10	40	5.83	

If the above data is not met, replace the room pipe sensor.

3. Assemble the room pipe sensor to PCB, plug in, and check the voltage of connector 3 and 4. If the resistance is below 0.5V or over 4.9V, replace the indoor Main PCB. (short or disconnected in the PCB board)

12-3-8 When the remote control is not receiving.

1. Check the connector was normally assembled.
2. Put the set in operation and check the voltage of Vout(+) and Gnd(-) of the RM01 while operating the remote control.
When the voltage descends below 3V, the assembly module PCB is normal and the main PCB is poor.
Then replace the main PCB.

12-4 PCB Inspection Method

12-4-1 Pre-inspection Notices

1. Check if you pulled out the AC power plug when you eliminate the PCB or front panel.
2. Don't hold the PCB side not impose excessive force on it to eliminate the PCB.
3. Don't pull the lead wire but hold the whole housing to connect or disconnect a connector to the PCB.

12-4-2 Inspection Procedure

1. Check connector connection and peeling of PCB or bronze coating pattern when you think the PCB is broken.
2. PCB composition

■ H/P Indoor mode [MH24F3A(B)NHAC/MH12F3A(B)NHAC/MH12F2A(B)NHAC/MH16F2A(B)NXAX/MH12F2ANXAX]

- Main PCB Part : MICOM And Surrounding Circuit, Room Fan Motor Driving Circuit and Control Circuit, Sensor Driving Circuit, Power Circuit Of DC12V And DC5V, and Buzzer Driving Circuit, Blade Driving Circuit.
- Sub PCB Part : AC communication circuit
- Display PCB Part : LED Lamp Display, Room Adderss Setting Circuit, Remocon Module, Switch

■ C/O Indoor model [MC24F3A(B)NXAX(XAP)/MC12F3A(B)NXAX(XAP)/MC18F2A(B)NXAX(XAP)/MC12F2NXAX(XAP)/MC09F3A(B)NXSS/MC06F3A(B)NXSS/MC09F2A(B)NXSS]

- POWER PCB Part : Relay, Room Fan Motor Driving Circuit And Control Circuit, Power Circuit Of Dc12v And DC5V, and Buzzer Driving Circuit
- Main PCB Part : MICOM and Surrounding Circuit, LED Lamp, Sensor Driving Circuit, Switch

■ H/P Outdoor model [MH48F3A(B)XHAC / MH24F2A(B)XHAC / MH32F2A(B)XXAX / MH24F2AXXAX]

- Main PCB Part : MICOM And Surrounding Circuit, Outdoor AC Load (Compressor, Fan Motor, Bypass Valve, 4 way Valve) Driving Circuit, Eev Driving Part, Power Circuit Of DC 12V And DC 5V, Sensor Driving Circuit, Data Display Circuit, Ac Communication Circuit

■ C/O Outdoor model [MC48F3A(B)XXAX(XAP) / MC20F3A(B)XXSS]

- Main PCB Part : MICOM and Surrounding Circuit, Outdoor AC load (Compressor, Fan Motor, Bypass Valve, Solenoid Valve) Driving Circuit, Power Circuit of DC12V and DC 5V, Sensor Driving Circuit, Indoor Comp Singal Receive Circuit

12-4-3 Detailed Inspection Procedure

■ H/P Indoor model [MH24F3A(B)NHAC / MH12F3A(B)NHAC / MH12F2A(B)NHAC / MH16F2A(B)NXAX / MH12F2ANXAX]

No	Procedure	Inspection Method	Cause
1	Plug out and pull the PCB out of the electronic box. Check the PCB fuse.	1) Is the fuse disconnected?	- Over current - Indoor fan motor short - AC part pattern short of the main PCB
2	Supply power. If the operation lamp twinkles at this time, 1) ~ 4) no relation.	1) Is the BD71 input voltage AC200V ~ AC240V?	- Power Cord is fault, Fuse Open, Wrong Power - Cable Wiring, AC Part is faulty - Choke Coil (FT71) is fault
		2) Is the voltage between both terminals of the C101 about DC 310V?	- Bridge Diode (BD71) is faulty
		3) Is the voltage between both terminals of the C103 on the second side of the switching transformer (ST11) about DC 12V?	- Switching Transformer or Power circuit is faulty
		4) Is the voltage between both terminals of OUT and GND of IC04(KA78L05) about DC 5V?	- Regulator IC (IC02) or Power circuit is faulty
3	Press the ON/OFF button 1. Fan mode on	1) Is the voltage over AC180V being imposed on the terminal #3 and #5 of the fan motor connector(CN72)	- SSR(SS71) is faulty - Micom is out of order - Communication between indoor and outdoor is faulty

■ C/O Indoor model [MC24F3A(B)NXAX(XAP)/MC12F3A(B)NXAX(XAP)/MC18F2A(B)NXAX(XAP)/MC12F2NXAX(XAP) MC09F3A(B)NXSS/MC06F3A(B)NXSS/MC09F2A(B)NXSS]

No	Procedure	Inspection Method	Cause
1	Plug out and pull the PCB out of the electronic box. Check the PCB fuse.	1) Is the fuse disconnected?	- Over current - Indoor fan motor short - AC part pattern short of the main PCB
2	Supply power. If the operation lamp twinkles at this time, 1) ~ 4) no relation.	1) Is the BD71 input voltage AC200V ~ AC240V?	- Power Cord is fault, Fuse Open, Wrong Power - Cable Wiring, AC Part is faulty - Choke Coil (FT71) is fault
		2) Is the voltage between both terminals of the C101 about DC 310V?	- Bridge Diode (BD71) is faulty
		3) Is the voltage between both terminals of the C103 on the second side of the switching transformer (ST11) about DC 12V?	- Switching Transformer or Power circuit is faulty
		4) Is the voltage between both terminals of OUT and GND of IC04(KA78L05) about DC 5V?	- Regulator IC (IC02) or Power circuit is faulty
3	Press the ON/OFF button 1. Cooling mode on (setting temp. must be higher than indoor temp.)	1) Is the voltage over AC180V being imposed on the terminal #3 and #5 of the fan motor connector(CN72) 2) Check the voltage of both terminals of indoor terminal block N and C after 3 minutes operation : AC 220V	- SSR(SS71) is faulty - Micom is out of order - RY71 is faulty - Connection is faulty

Detailed Inspection Procedure(cont.)

■ H/P Outdoor model [MH48F3A(B)XHAC / MH24F2A(B)XHAC / MH32F2A(B)XXAX / MH24F2AXXAX]

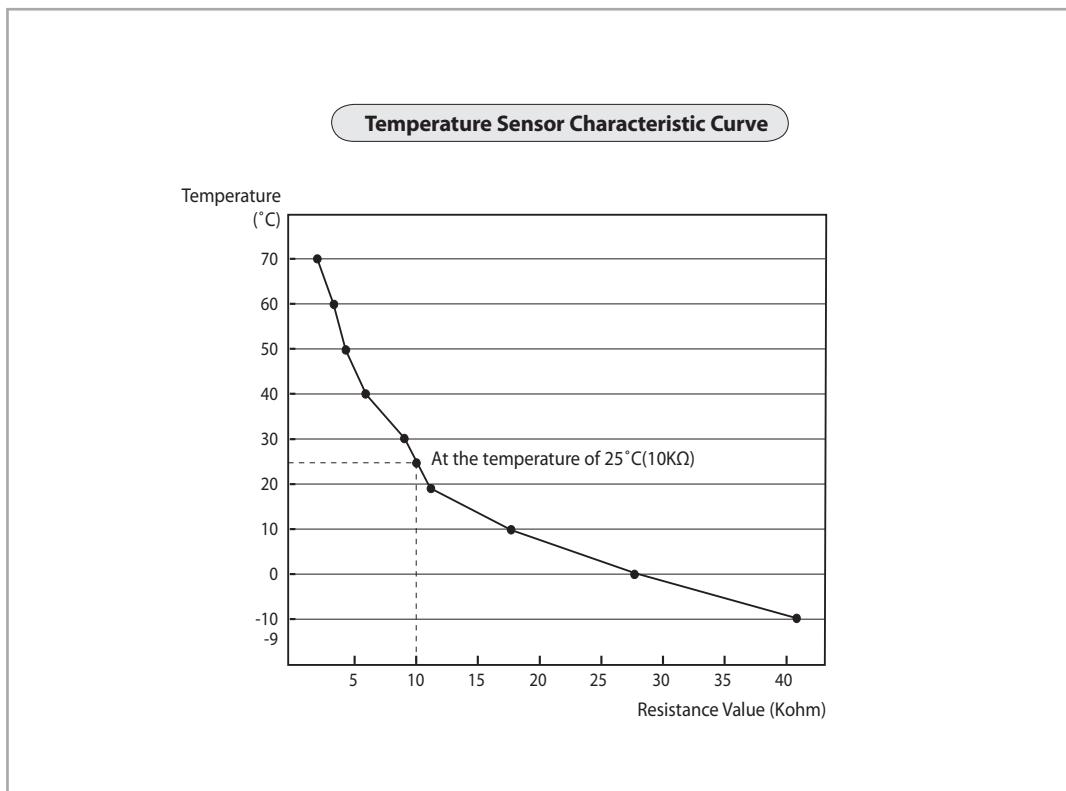
No	Procedure	Inspection Method	Cause
1	Plug out and pull the PCB out of the electronic box. Check the PCB fuse.	1) Is the fuse disconnected?	- Over current - Indoor fan motor short - AC part pattern short of the main PCB
2	Supply power. If the 7-segment display at this time, 1) ~ 4) no relation.	1) Is the voltage between both terminals #1 and #3 of the transformer input connector(GT-2) voltage AC200V ~ AC240V?	- Over current - Indoor fan motor short - AC part pattern short of the main PCB
		1) Is the voltage between both terminals #1 and #3 of the transformer input connector(GT-2) voltage AC200V ~ AC240V?	- Transformer is faulty
		3) Is the voltage between 12V line and ground line that marked on the PCB about 12V?	- Fuse Open - Regulator IC KA7812(IC01) or Power circuit is faulty
		4) Is the voltage between 5V line and ground line that marked on the PCB about 5V?	- Regulator IC KA7805(IC02) or Power circuit is faulty

■ C/O Outdoor model [MC48F3A(B)XXAX(XAP) / MC20F3A(B)XXSS]

No	Procedure	Inspection Method	Cause
1	Plug out and pull the PCB out of the electronic box. Check the PCB fuse.	1) Is the fuse disconnected?	- Over current - Indoor fan motor short - AC part pattern short of the main PCB
2	Supply power. If the 7-segment display at this time, 1) ~ 4) no relation.	1) Is the voltage between both terminals #1 and #3 of the transformer input connector(GT-2) voltage AC200V ~ AC240V?	- Power Cord is fault, Fuse Open, Wrong Power - Cable Wiring, AC Part is faulty
		2) Is the voltage between both terminals #1 and #3 of the transformer output connector(CN11) voltage AC17V ~ AC19V?	- Transformer is faulty
		3) Is the voltage between 12V line and ground line that marked on the PCB about 12V?	- Fuse Open - Regulator IC KA7812(IC01) or Power circuit is faulty
		4) Is the voltage between 5V line and ground line that marked on the PCB about 5V?	- Regulator IC KA7805(IC02) or Power circuit is faulty

12-4-4 Temperature Sensor Feature Conversion Table(Room Temperature Sensor); 103AT

Temperature [°C]	Sensor Resistance [Kohm]						
70	2.229	49	4.300	29	8.622	9	18.700
69	2.296	48	4.444	28	8.944	8	19.480
68	2.365	47	4.594	27	9.281	7	20.290
67	2.437	46	4.749	26	9.632	6	21.150
66	2.512	45	4.912	25	10	5	22.050
65	2.589	44	5.080	24	10.380	4	22.990
64	2.669	43	5.256	23	10.780	3	23.900
63	2.752	42	5.439	22	11.200	2	25.030
62	2.838	41	5.630	21	11.630	1	26.130
61	2.928	40	5.828	20	12.090	0	27.280
59	3.116	39	6.033	19	12.560	-1	28.470
58	3.216	38	6.246	18	13.060	-2	29.720
57	3.319	37	6.468	17	13.570	-3	31.040
56	3.426	36	6.699	16	14.120	-4	32.430
55	3.537	35	6.941	15	14.680	-5	33.890
54	3.652	34	7.192	14	15.280	-6	35.430
53	3.772	33	7.455	13	15.900	-7	37.050
52	3.897	32	7.729	12	16.550	-8	38.760
51	4.026	31	8.015	11	17.240	-9	40.560
50	4.161	30	8.313	10	17.960		



12-5 Main Part Inspection Method

Part	Breakdown Inspection Method	
Room Temperature Sensor	Measure resistance with a tester	
	Normal	At the normal temperature $37k\Omega \sim 8.3k\Omega$ ($-7^{\circ}\text{C} \sim +30^{\circ}\text{C}$) *Refer to Table 12-4-4.
	Abnormal	$\infty, 0\Omega \dots$ Open or Short
Room Fan Motor	Measure the resistance between terminals of the connector (CN72) with a tester.	
	Abnormal	$\infty, 0\Omega \dots$ Open or Short
Outdoor Fan Motor	Measure resistance with a tester	
	Abnormal	$\infty, 0\Omega \dots$ Open or Short
Stepping Motor	Measure the resistance between the red wire and each terminal wire with a tester.	
	Normal	About 300Ω at the normal temperature ($20^{\circ}\text{C} \sim 30^{\circ}\text{C}$)
	Abnormal	$\infty, 0\Omega \dots$ Open or Short